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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/879,491 Filing Date: June 12, 2001

Appellant(s): BUSCHE, FREDERICK D.

Wayne P. Bailey For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/31/2007 appealing from the Office action mailed 06/01/2007.

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(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| 5,537,488 | MENON ET AL | 07-1996 |
|-----------|-------------|---------|
| 6,741,967 | WU ET AL | 05-2004 |

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(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-8, 10-22, 24-35 and 37-43 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth whether the invention produces a useful, concrete, and tangible result.

Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts.

Mere intended or nominal use of a component, albeit within the technological arts, does not confer statutory subject matter to an otherwise abstract idea if the component does not apply, involve, use, or advance the underlying process.

In the present application, claims 1-8, 10-22, 24-35 and 37-43 do not recite a "concrete and tangible result". Claims 1-8, 10-22, 24-35 and 37-43 recites using a predictive algorithm but do not recite a concrete and tangible result from said using.

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Also, claims 29 and 43 do not meet the definition of a true data structure (see IEEE definition in MPEP 2106).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 15, 29 and 41-43 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 41-43 recite "using the predictive algorithm to predict customer behavior based on the data network geographical information". Claims 1, 15 and 29 recite "using the modified selection of entries by the predictive algorithm". Applicant's <u>background</u> only explain how to use said predictive algorithm in page 44, lines 13-20 where it recites "the predictive algorithm may then use the training data set and testing data set to train itself and generate customer behavior rules. Thereafter, if a user inputs a request parameters for requesting a prediction of customer behavior, the customer behavior rules will be applied to the input parameters and a customer behavior prediction will be output". Nowhere, in said reciting or anywhere else in Applicant's specification is explained how

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the predictive algorithm would predict customer behavior based upon network geographic location.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C.103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior at are such that the subject matter sa whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter portains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 10-22, 24-35 and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over <u>Menon</u> et al (U.S. 5,537,488) in view of <u>Wu</u> (US 6,741,967) and further in view of Applicant's <u>background of the Invention</u>.

As per claims 1, 15 and 29, Menon teaches:

A data processing machine implemented method of selecting data sets for use with a predictive algorithm based on data network geographical information, comprising data processing machine implemented steps of:

generating a first statistical distribution of a training data set (see column 20, lines 50-52);

generating a second statistical distribution of a testing data set (see column 20, lines 60-63);

using the first statistical distribution and the second statistical distribution to identify a discrepancy between the first statistical distribution and the second statistical distribution (see column 20, lines 61-64);

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modifying selection of entries in one or more of the training data set and the testing data set based on the discrepancy between the first statistical distribution and the second statistical distribution (see column 21, lines 20-24)

using the modified selection of entries by the predictive algorithm and that said using is done by comparing at least one of the first statistical distribution and the second statistical distribution to a statistical distribution of a customer database (see col 5, line 35 - col 6, line 56; column 6, line 57 - column 7, line 21; Menon compares input training data vector to a present cluster of a category of a customer database (i.e. photographs and voice data from different persons) and modifies said present cluster of category if said input training data set exceeds a correlation threshold) but fails to teach with respect to the data network geographical information to determine if at least one of the training data set and the testing data set are geographically representative of a customer population represented by the customer database. Applicant's background of the Invention teaches that it is old and well known in the artificial intelligence art to input training and test data into a predictive algorithm for the purpose of predicting a customer's propensity to respond to an offer or his propensity to buy a product (see Applicant's background page 3). Wu teaches a system that determines customer's navigational path through websites or web pages by calculating the amount of Links by task, site and speed of search results in order to predict if an increase in a customer's purchase rate was the result of an improvement in said navigational path (see Wu column 18, table B; col 36, lines 24-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the application was made, to know that

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Menon would use the <u>Wu</u>'s navigation data and Applicant's <u>background</u> to define statistical training and test data which would be input into a predictive algorithm in order to predict a customer behavior based upon said customer's links navigation data. <u>Wu</u>'s Web product managers would be motivated to use a predictive algorithm to determine how customers access time, number of clicks and other navigational cues influence purchase behavior (see <u>Wu</u> column 24, lines 1-25) in order that said predictive algorithm help said managers increase customers' satisfaction and purchase rate.

As per claims 2, 3, 5, 6, 10, 16, 17, 19, 20, 24, 30, 31, 33, 34 and 37 Menon teaches the method of claim 1, but fails to teach wherein the first statistical distribution and the second statistical distribution are distributions of a number of data network links from a customer data network geographical location to a web site data network geographical location and the size of a click stream to arrive at a web site data network geographical location and a weighted number of data network links between a customer data network geographical location and a web site data network geographical location and frequency distributions of a number of data network links between a customer data network geographical location and one or more web site data network geographical location. Wu teaches a system that determines customer's navigational path through websites or web pages by calculating the amount of Links by task, site and speed of search results in order to predict if an increase in a customer's purchase rate was the result of an improvement in said navigational path (see Wu column 18, table B; col 36, lines 24-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the application was made, to know that Menon would use the Wu's

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navigation data and Applicant's <u>background</u> to define statistical training and test data which would be input into a predictive algorithm in order to predict a customer behavior based upon said customer's links navigation data. <u>Wu</u>'s Web product managers would be motivated to use a predictive algorithm to determine how customers access time, number of clicks and other navigational cues influence purchase behavior (see <u>Wu</u> column 24, lines 1-25) in order that said predictive algorithm help said managers increase customers' satisfaction and purchase rate.

As per claims 4, 18 and 32, Menon teaches:

The method of claim 1, wherein comparing the first statistical distribution and the second statistical distribution includes comparing one or more of a mean, mode, and standard deviation of the first statistical distribution to one or more of a mean, mode, and standard deviation of the second statistical distribution (see column 6, line 57 – column 7, line 20).

As per claims 7, 21 and 35, Menon teaches:

The method of claim 1, wherein modifying selection of entries in one or more of the training data set and the testing data set includes generating recommendations for improving selection of entries in one or more of the training data set and the testing data set and wherein the method of claim 1 further comprises re-generating at least one of the first statistical distribution and the second statistical distribution based upon the recommendations (see column 21, lines 20-24).

As per claims 8 and 22, Menon teaches:

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The method of claim 1, wherein the training data set and the testing data set are selected from a customer information database (see column 5, lines 37-55) but fails to teach comprising information with respect to customers who have purchased any of goods and services over a data network, wherein the data network geographic information pertains to geographic information of the data network. Wu teaches a system that determines customer's navigational path through websites or web pages by calculating the amount of Links by task, site and speed of search results in order to predict if an increase in a customer's purchase rate was the result of an improvement in said navigational path (see Wu column 18, table B; col 36, lines 24-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the application was made, to know that Menon would use the Wu's navigation data and Applicant's background to define statistical training and test data which would be input into a predictive algorithm in order to predict a customer behavior based upon said customer's links navigation data. Wu's Web product managers would be motivated to use a predictive algorithm to determine how customers access time, number of clicks and other navigational cues influence purchase behavior (see Wu column 24, lines 1-25) in order that said predictive algorithm help said managers increase customers' satisfaction and purchase rate.

As per claims 11, 25 and 38, Menon teaches:

The method of claim 1, wherein comparing at least one of the first statistical distribution and the second statistical distribution to a statistical distribution of a customer database includes:

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generating a composite data set from the training data set and the testing data set; and generating a composite statistical distribution from the composite data set that was generated from the training data set and the testing data set (see Menon column 4, lines 1-15).

As per claims 12, 26 and 39, Menon teaches:

The method of claim 1, wherein modifying selection of entries in one or more of the training data set and the testing data set (see column 2, lines 4-20) but fails to teach includes changing one of a random selection algorithm and a seed value for the random selection algorithm and then re-comparing the first statistical distribution and the second statistical distribution. However, Applicant's background of the Invention teaches that it is old and well known to use random selection procedure to insure that the both the training data and test data sets are representative of the entire data population being evaluated (see Applicant's background page 3). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the application was made, to know that Menon would use the random selection algorithm to create a training and test data that would be input to a predictive algorithm in order to insure a training and test data representative of the entire data population being evaluated, as taught by Applicant's background. Menon would be motivated to re-compare said training and test data in order to improve said data by increasing the probability of obtaining a better representation of said data population due to said re-comparing.

As per claims 13, 27 and 40, Menon teaches:

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The method of claim 1, wherein using the modified selection of entries by the predictive algorithm includes training the predictive algorithm using at least one of the training data set and the testing data set if the discrepancy is within a predetermined tolerance (see column 1, lines 30-35).

As per claims 14 and 28, Menon teaches:

The method of claim 13, wherein the predictive algorithm is a discovery based data mining algorithm (see column 1, lines 20-40).

Claims 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over <u>Wu</u> (US 6,741,967) in view of Applicant's <u>background of the Invention</u> and further in view of <u>Menon</u> (US 5,537,488).

As per claims 41-43, Wu teaches:

A data processing machine implemented method of predicting customer behavior based on data network geographical influences, comprising data processing machine implemented steps of:

obtaining data network geographical information regarding a plurality of customers (see column 30, column 24, lines 1-25);

the data network geographic information of both (i) number of data network links between a customer geographical location and one or more web site data network geographical locations (see col 18, table B), and (ii) size of a click stream for arriving at the one or more web site data network geographical locations (see col 18, table B);

<u>Wu</u> fails to teach that the data network geographic information comprising frequency distributions and training a predictive algorithm using the data network

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geographical information; and using the predictive algorithm to predict customer behavior based on the data network geographical information. However, Applicant's background of the Invention teaches that it is old and well known in the artificial intelligence art to input training and test data into a predictive algorithm for the purpose of predicting a customer's propensity to respond to an offer or his propensity to buy a product (see Applicant's background page 3). Menon teaches using training and test data set, which comprises histogram distributions (see figures 2A-C). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the application was made, to know that Menon would use the Wu's navigation data and Applicant's background to define statistical training and test data which would be input into a predictive algorithm in order to predict a customer behavior based upon said customer's links navigation data. Wu's Web product managers would be motivated to use a predictive algorithm to determine how customers access time, number of clicks and other navigational cues influence purchase behavior (see Wu column 24, lines 1-25) in order that said predictive algorithm help said managers increase customers' satisfaction and purchase rate.

(10) Response to Argument

The Appellant argues in page 14 of the Brief that claims 1-8, 10-22, 24-35 and 37-43 recite a concrete and tangible result. The Examiner answers that the MPEP 2106 teaches that "the tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require

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that the claim must recite more than a 35 U.S.C. 101 judicial exception, in that the process claim must set forth a practical application of that judicial exception to produce a real-world result. *Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical application."). "[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection." *Diehr*, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also *Coming*, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 ("It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . ."). In other words, the opposite meaning of "tangible" is "abstract." Appellant's claims 1-8, 10-22, 24-35 and 37-43 are abstract ideas and therefore, contrary to Appellant's argument, said claims do not produce a "tangible" and "concrete" result.

The Appellant argues in page 23 of the Brief that the rejection of claims 1, 15, and 29 under Section 112 first paragraph is erroneous because according to the Appellant, the Appellant's specification describes how to use the predictive algorithm to predict customer behavior based on the data network geographical information. The Examiner answers that Applicant's <u>background</u> only explain how to use said predictive algorithm in page 44, lines 13-20 where it recites "the predictive algorithm may then use the training data set and testing data set to train itself and generate customer behavior rules. Thereafter, if a user inputs a request parameters for requesting a prediction of customer behavior, the customer behavior rules will be applied to the input parameters and a customer behavior prediction will be output". Nowhere, in said reciting or

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anywhere else in Applicant's specification is explained how the predictive algorithm would predict customer behavior based upon network geographic location.

The Appellant argues in page 27 of the Brief that none of the references make any mention of using data network geographic information to modify entries of the testing or training data sets that are used by a predictive algorithm. The Examiner answers that Applicant's background of the Invention teaches that it is old and well known in the artificial intelligence art to input training and test data into a predictive algorithm for the purpose of predicting a customer's propensity to respond to an offer or his propensity to buy a product (see Applicant's background page 3). Wu teaches a system that determines customer's navigational path through websites or web pages by calculating the amount of Links by task, site and speed of search results in order to predict if an increase in a customer's purchase rate was the result of an improvement in said navigational path (see Wu column 18, table B; col 36, lines 24-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the application was made, to know that Menon would use the Wu's navigation data and Applicant's background to define statistical training and test data which would be input into a predictive algorithm in order to predict a customer behavior based upon said customer's links navigation data. Wu's Web product managers would be motivated to use a predictive algorithm to determine how customers access time, number of clicks and other navigational cues influence purchase behavior (see Wu column 24, lines 1-25) in order that said predictive algorithm help said managers increase customers' satisfaction and purchase rate.

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The Appellant argues in page 27 of the Brief that Menon does not teach "using the first statistical distribution and the second statistical distribution to identify a discrepancy between the first statistical distribution and the second statistical distribution" because Menon describes receiving one test input pattern and according to the Appellant, said input pattern is not a statistical distribution. The Examiner answers that Appellant's claims simply recite "generating a statistical distribution" and Menon test input pattern data is a "statistical distribution" as said data consist of the frequency distribution of a peak class of the best match category (see Menon col 2, lines 45-65). Therefore, contrary to Appellant's argument, Menon teaches a training data set and a testing data set that are statistical distributions.

The Appellant argues in page 28 of the Brief that Menon and Wu do not teach "using the first statistical distribution and the second statistical distribution with respect to the data network geographical information". The Appellant further argues that the Examiner has failed to properly establish a prima facie showing of obviousness with respect to claim 1 and therefore, according to the Appellant, the burden has not shifted to Appellants to overcome an obviousness rejection. The Examiner answers that Menon and Applicant's background (see page 3) teach that it is old and well known in the art to input a training and test data set into predictive algorithm and Wu teaches a system that collects network geographical information (see Wu column 24, lines 1-25). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the application was made, to use the network geographic data obtained from the Wu system in order to generate a testing and training data set and input said data into a

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predictive algorithm in order to predict a behavior, as it is old and well known to do so, as taught by Menon and Appellant's background of the Invention.

The Appellant argues in page 31 of the Brief that the Examiner is using improper hindsight analysis in rejection claim 1. The Appellant further argues that the Examiner use Appellant's own disclosure in the background section of the present application as a catalyst for making the combination of such dissimilar teaching, and that, according to the Appellant, said using is further evidence of improper hindsight analysis. The Examiner answers that the Examiner used Appellant's background of the invention because said Appellant's background teaches that it is old and well known in the art to input training and test data into a predictive algorithm for the purpose of predicting a customer's propensity to respond to an offer (see Appellant's background page 3). Menon teaches that it is old and well known to compare training data set with a test data set and modified said training or test data set based upon said comparison in order to use said data set in a predictive algorithm (see Menon col 5, line 55 - col 6, lines 20; col 8, lines 5-30) and Wu teaches a system that determines customer's navigational path through websites or web pages by calculating the amount of Links by task, site and speed of search results in order to predict if an increase in a customer's purchase rate was the result of an improvement in said navigational path (see Wu column 18, table B; col 36, lines 24-30). Therefore, contrary to Appellant's argument, the Examiner is not using improper hindsight because it would have been obvious to a person of ordinary skill in the art at the time the application to generate a training and test data set from network geographic data obtained from the Wu system in order to input said data into a

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predictive algorithm and predict some behavior, as it is old and well known to input training and test data into a predictive algorithm, as taught by Appellant's background and Menon.

The Appellant argues in page 32 of the Brief that the Examiner's reliance on Appellant's background of the Invention to establish what was old and well known fails to overcome Appellant's claimed invention, because according to the Appellant, is the particular usage (modifying selection of testing/training data set entries) by the discrepancy between the first statistical distribution of a training data set and the second statistical distribution of a testing data set with respect to the data network geographical information that is, according to the Appellant, not taught by the combined teachings of the cited references. The Examiner answers Appellant's claims simply recite "modifying selection of entries in one or more of the training data set and the testing data set". Menon compares input training data vector to a present cluster of a category of a customer database (i.e. photographs and voice data from different persons) and modifies said present cluster of category if said input training data set exceeds a correlation threshold. Therefore, contrary to Applicant's argument, Menon compares at least one statistical distribution (i.e. training vector) to a cluster category customer database (i.e. photographs and voice data of different persons).

The Appellant argues in pages 33-36 and 39 of the Brief that even if \underline{Wu} is alleged to teach a calculation of the amount of links by task or size of click stream or weighted distance or weighted click stream, or frequency distribution of both number of data links and size of a click stream such alleged teaching does not establish, according to the

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Appellant, of the specific use of such link information. The Examiner answers that Appellant's claims simply disclose inputting a modified selection of training and testing data set into a predictive algorithm. Therefore, it would have been obvious to a person of ordinary skill in the art that the network geographic data (i.e. navigation path) obtained from the <u>Wu</u> system would be used as training or testing data that would be inputted into a predictive algorithm in order to predict a behavior, as Appellant's <u>background of the invention</u> (see Appellant's <u>background</u> page 3) and <u>Menon</u> (see col 2, lines 42-52; col 7, line 60 - col 8, line 20) teach that it old and well known in the art to input training and/or testing data into a predictive algorithm in order to predict a behavior. Therefore, contrary to Appellant's argument, <u>Menon</u>, <u>Wu</u> and Appellant's background of the Invention teach Appellant's claimed invention.

The Appellant argues in pages 34-35 of the Brief with respect to claim 4 that <u>Menon</u> teaches normalization for training data sets but there is no mentioned of testing data sets nor comparing statistical distributions of both training data sets and testing data sets. The Examiner answers that <u>Menon</u> uses the normalization in order to classify input test patterns (see Menon col 7, lines 1-5; 60-670. Therefore, contrary to Appellant's argument, <u>Menon</u> uses the mean to compare testing and training data sets.

The Appellant argues in page 37 of the Brief with respect to claim 7 that none of the cited reference suggest the feature of generating recommendations for improving selection of entries. The Examiner answers that Appellant's specification and claims simply recite the term "generating recommendations" but do not mention anything else.

Menon teaches making decision which can be construed to be recommendations in

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classifying training data or testing data (see col 13, lines 60-67). Therefore, contrary to Appellant's argument, Menon teaches Appellant's "recommendation" limitation.

The Appellant argues in pages 37-38 of the Brief that <u>Menon</u> does not teach the "training data set and the testing data set are selected from a customer information database". The Examiner answers that <u>Menon</u> teaches that the training and testing data sets are obtained from frame of data from customer information, such as photographs showing several views (see <u>Menon</u> col 1, lines 60-67; col 2, lines 45-50). Therefore, contrary to Appellant's argument, <u>Menon</u> "training" and "testing" data sets are selected from a customer database

The Appellant argues in page 39 of the Brief that <u>Menon</u> does not teach a composite statistical distribution from the training and the testing data set. The Examiner answers that <u>Menon</u> teaches comparing a testing data set with a training data set and based upon said comparison modifying said training data set (i.e. composite) (see <u>Menon</u> col 8, lines 1-15). Therefore, contrary to Appellant's argument, Menon teaches the "composite" limitation.

The Appellant argues in page 40 with respect to claims 41-43 that none of the cited references teach or suggest a customer geographic information to train a predictive algorithm. The Examiner answers that <u>Wu</u> fails to teach that the data network geographic information comprising frequency distributions and training a predictive algorithm using the data network geographical information; and using the predictive algorithm to predict customer behavior based on the data network geographical information. However, Applicant's background of the Invention teaches that it is old and

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well known in the artificial intelligence art to input training and test data into a predictive

algorithm for the purpose of predicting a customer's propensity to respond to an offer or

his propensity to buy a product (see Applicant's <u>background</u> page 3). <u>Menon</u> teaches

using training and test data set, which comprises histogram distributions (see figures

2A-C). Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the application was made, to know that Menon would use the Wu's navigation

data and Applicant's background to define statistical training and test data which would

be input into a predictive algorithm in order to predict a customer behavior based upon

said customer's links navigation data. $\underline{\textit{Wu}}\mbox{'s}$ Web product managers would be motivated

to use a predictive algorithm to determine how customers access time, number of clicks

and other navigational cues influence purchase behavior (see Wu column 24, lines 1-

25) in order that said predictive algorithm help said managers increase customers'

satisfaction and purchase rate.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/DANIEL LASTRA/

Conferees:

Eric Stamber /E. W. S./

Supervisory Patent Examiner, Art Unit 3622

Raquel Alvarez/R. A./

Primary Examiner, Art Unit 3622